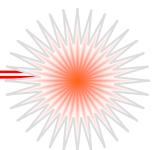




**Installation &
Commissioning
of
Control & Monitoring
Add On's**

**PLUS
ZoneSense**



Fire Alarm Control Panel

EN54 2 & 4 1997

"Our aim is to provide 'Consistently Excellent Service' in the eyes of our customers"

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1 About This Manual

1.1 Purpose

This manual is an instructional tool for the installation and commissioning, of add on ancillary cards, modules and boards that can be fitted to the **ZoneSense PLUS** Fire Alarm Control Panel (FACP) and should be read in conjunction with the main Installation and Commissioning Manual.

1.2 Scope

The information within this manual is only available to and for the use of personnel engaged in the installation and operation of the **ZoneSense PLUS** FACP.

ZoneSense PLUS has been designed to comply with major world standards. To ensure these standards are not compromised in any way installation staff and operators should;

1. be qualified and trained for the task/s they undertake;
2. be aware this manual should be read prior to the installation and commissioning of the **ZoneSense PLUS** FACP;
3. observe anti-static pre-cautions at all times; and
4. if a problem is encountered or there is any doubt with respect to the operational parameters of the installation the supplier should be contacted.

1.3 References

ZoneSense PLUS Technical Manual

ZoneSense PLUS Operation & Programming Manual

ZoneSense PLUS Installation and Commissioning Manual

Apollo Detector / Device Manuals

Ampac Product Data Sheets

British Standard EN54 Parts 2 & 4

European Standard BS 5839



Figure 1: Examples of the ABS, Metal Cabinet and Metal Cabinet with Battery Box

1.4 PCB Removal / Replacement

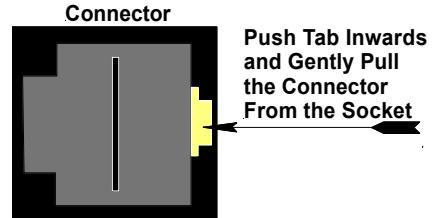
If the PCB's have to be removed the following precautions should be observed;



1. Removing the door will provide better access to the boards and ensure the hinges are not accidentally stressed.
2. Personal anti- static procedures must be followed.
3. When disconnecting the telecom style connecting cable from the PCB, make sure that the cable remains connected to at least one board to prevent it being misplaced.



Note: *Care should be taken when detaching this connector as it is necessary to depress the small locking tab to unlock the connector from its base. To reconnect the cable the connector must first be correctly aligned then pushed into the socket so it locks into position.*



4. Carefully remove the retaining screws at each corner of the board taking care not to damage any of the components.
5. Place each board into anti- static storage once removed.

2

Wiring to the Main Card BRD25MCB

2.1 Communications

External Communications Terminals (RS485) TB2 1, 2 & 3

The RS 485 output drives the remote cards and mimics up to a distance of 1.2km from the panel itself. The external cabling (2x2 shielded pair plus power) is wired to TB2 +, - and earth.



Note: If a fault occurs on the communications line the common FAULT and SYSTEM FAULT LED'S will be illuminated. The fault details can be displayed by selecting the Faults Menu.

Remote Cards

The number of cards that can be installed on the external communications bus are:

- > 8 x Remote LED Mimics.
- > 1 x 8 Way Remote Relay Output Board. This board provides 8 sets of normally open (NO), normally closed (NC) and Common (C) voltage free contacts rated at 1A @ 30V.

Main Card Comms Link K1

K1 **MUST** be inserted when only the front door panel cards and the Main Card are used as an FACP. If this is not the case and TB2 is cabled to LED mimics and / or 8 Way Remote Relay Boards a link is inserted in the last board to complete the communication circuit **or** if boards are mounted on the back pan and communications are wired from the Main Card then the last board in this chain **MUST** be terminated.

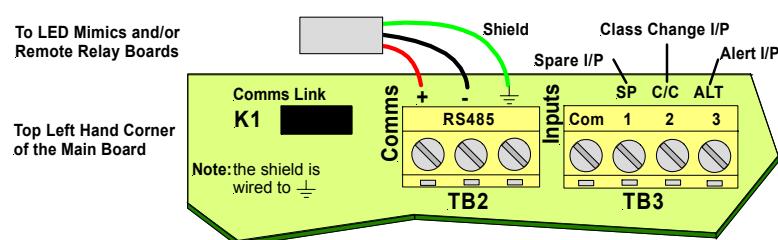


Figure 2: Wiring Detail

3 Adding Control and Monitoring Facilities

A combination of **one of each type** of board / card, but not all of them, can be mounted on the back pan or the front panel of the FACP to provide additional features to a standard panel. All board inputs or outputs are programmable to any combination of zones.

- Relay Board, BRD25EWRB -A or with a change of on board components it can also be installed remotely on the external communications bus as a Remote Relay Board BRD25EWRB -B
- Input Board BRD25SIPB -.
- Sounder Board BRD25SOPB.
- Brigade Interface Board BRD25BBA.
- Fire Fan Module consists of a Termination Board (BRD25FTB and front panel card BRD25FCB -.
- Agent Release Module consists of a Termination Board (BRD25ATB), front panel card (BRD25ARB-A) and if required a remote local control station (BRD25ARB-B).
- General Indicator Card. BRD25GIB -A
- Switch and Indicator Card BRD25GIBA
- Zone Mimic Indicator Card (Internal Power) BRD25GIB -C
- Zone Mimic Indicator Card (External Power normally remote) BRD25GIB -D

 Note: To add or remove Cards from the FACP programming go to the SYSTEM Menu.

3.1 Internal Communications Connector (RS485)

PCB mounted connectors provide serial communications to internal ancillary boards. CN9 on the Main Card cables to CN1 or 2 on the front panel boards and CN5 on the Main Card cables to CN1 or 2 on the back pan boards

3.2 Programming

Refer to the Operation and Programming Manual to program the above options into the FACP.

Note: The Configuration label should be updated once the panel has been upgraded.

4 Installation and Wiring of Add On Cards and Boards

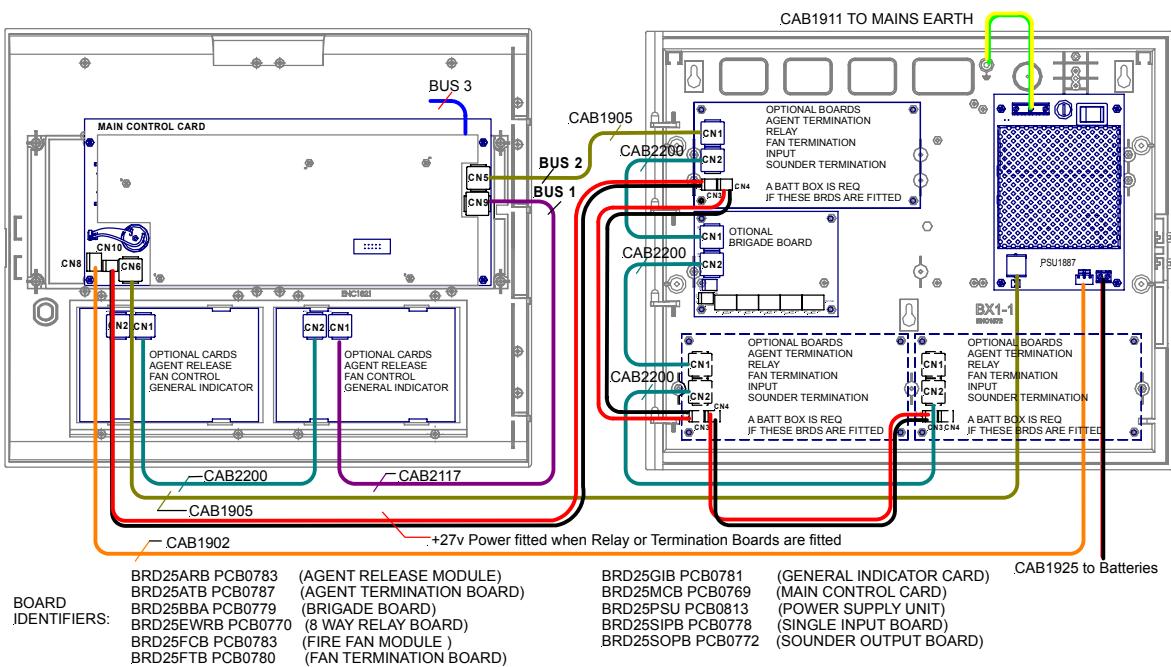


Figure 3: Typical Wiring, Ancillary Card and Board Positioning Within the ABS FACP

4.1 Address Setting and Terminating the Communications Bus

Address Setting (SW1)

Except for the LED Mimics in **ZoneSense PLUS** FACP's there can only be one (1) Board / Card of each type so the address on each board is set to 1.



Note: There can be up to 8 remote LED Mimics so the address of each is set from 1-8 depending on the number Mimics in the system. The information displayed at each location will be identical.

DIL Switch: ON = 1, OFF = 0

Address	1234	Address	1234
01	1000	05	1010
02	0100	06	0110
03	1100	07	1110
04	0010	08	0001

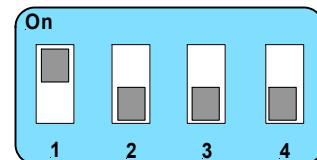


Figure 4:Address Table & Example of Switch (SW1) Set to 1

Terminating the Communications Bus

LK1 is the EOL Link and **must** be inserted on the last board on each communications bus. If not, a communications fault can occur.

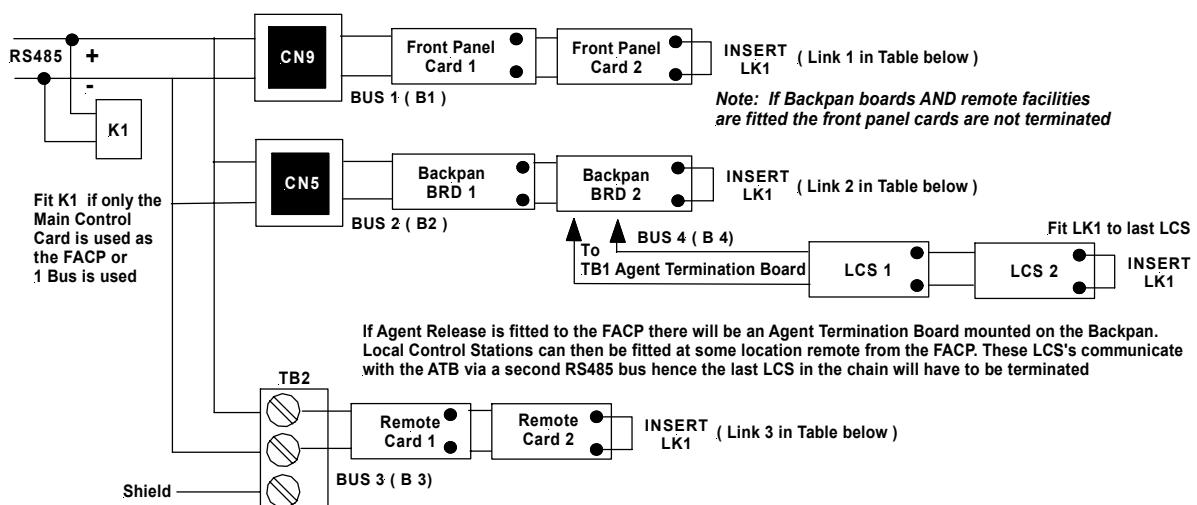


Figure 5: RS485 Communication Bus Terminating

Linking Table

Link	Bus Configuration						
	B1	B1,2	B1,3	B1,2,3	B,2	B2,3	B3
1	X & K1	X	X				
2		X		X	X & K1	X	
3			X	X		X	X & K1

X = Insert Link

B1: Bus 1 to Front Panel Cards

B2: Bus 2 to Backpan Boards

B3: Bus 3 to Remote facilities

B4: Bus 4 Local Control Station cabled to the backpan Agent Release Board.



Note: Programming and the communication process allows the Main Card to identify the type of board it is communicating with.

4.2 Input Board BRD25SIPB

Description

The Input Board makes provision for 16 voltage free contacts to be terminated to 16 optically coupled inputs. Its application is primarily for the monitoring of controlled ancillary equipment or to initiate an action / event due to a change of state from what is accepted as the norm.

Connectors

- CN1 Is designated as the input Comms .
- CN2 Is designated as the output Comms to the next board.
- CN3 27 Volts into the Board. Quiescent Current: 2.6mA
- CN4 27 Volts to the next Board unless it is the last board in the chain then it is left empty.

Terminal Blocks

TB 2 – 9 Taking note of the Common 0v terminals connect the voltage free contacts as shown below. **Note:** only the first 8 are functionally programmable in ZoneSense PLUS

SW1 There can only be 1 Input Board so the address on each board is set to 1.

LK1 Is the EOL Link and is inserted should the board be the last in the chain. If not inserted on the last board the Main Card will initiate a communications fault.

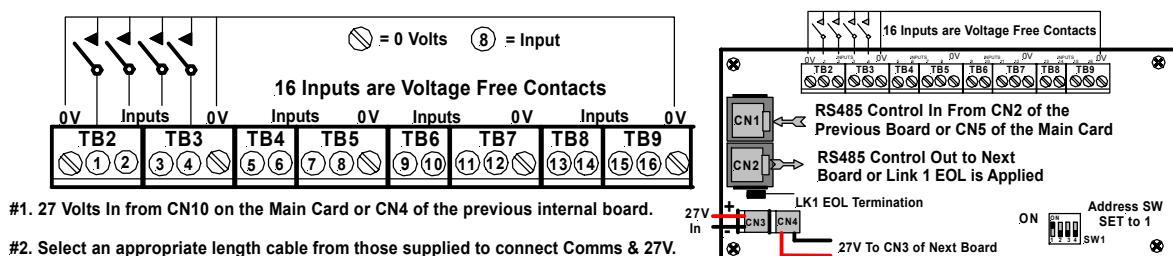


Figure 6: Typical Input Wiring and Board Layout

4.3 Relay Board BRD25EWRB

Relay Board (Internal) BRD25EWRB -A

The Relay Board has provision for 8 X 1 Amp voltage free change over contacts for control or monitoring purposes. Communication and control cabling is the same as all other internal boards.

Quiescent Current: 2.4mA

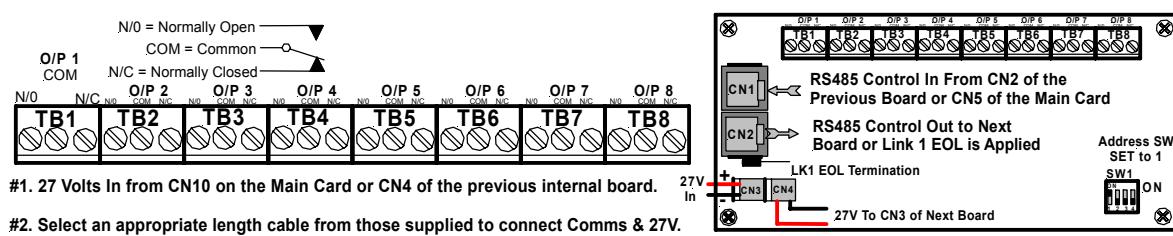


Figure 7: Board Layout

Relay Board (Remote) BRD25EWRB - B

In the remote version the Comms In and Out Terminal Block TB9 is cabled to the RS 485 Comms terminal block TB3 on the Main Card 302 – 7690 or LED Mimic and can be installed up to 1.2kms from the FACP.

- ☞ **Note#1:** This version can be powered from the panel or an external 27 volt source due to the on board switched mode supply. Quiescent Current of both boards is 16mA
- ☞ **Note#2:** In a system there can only be either a remote **OR** an internal board, not both.

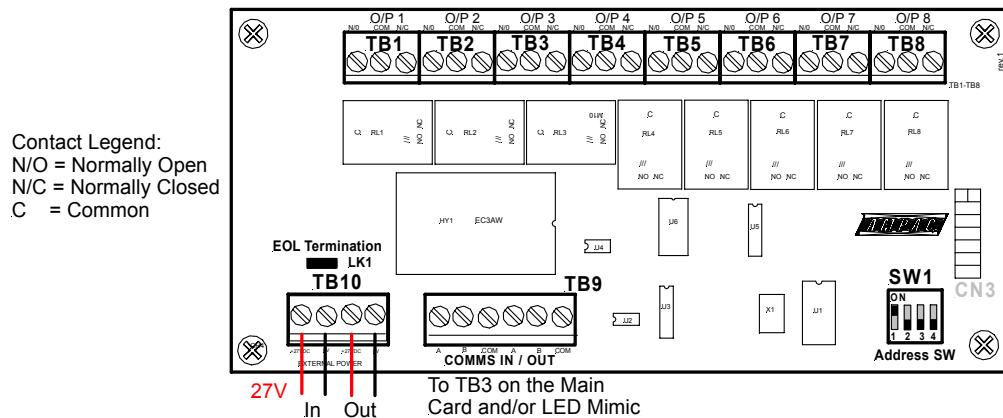


Figure 8: Remote Relay Board Layout

4.4 Fire Fan Module BRD25FCB

The Fire Fan Module has four (4) separate fan controls each having an On, Auto and Off function switch and a set of three (3) monitoring LED's. The LED's indicate the status of the equipment eg. Run, Fault or Stop. The two (2) arrow head keys are used to step up and / or down through the three (3) conditions. A slip in label can also be inserted into the hinged cover for identification purposes.

Quiescent Current: 13.5mA

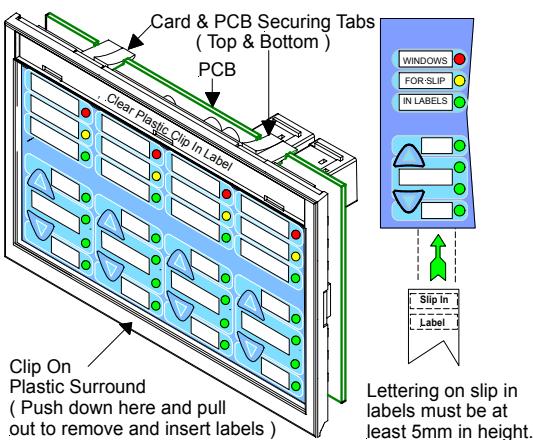


Figure 9: Fire Fan Module Front Panel

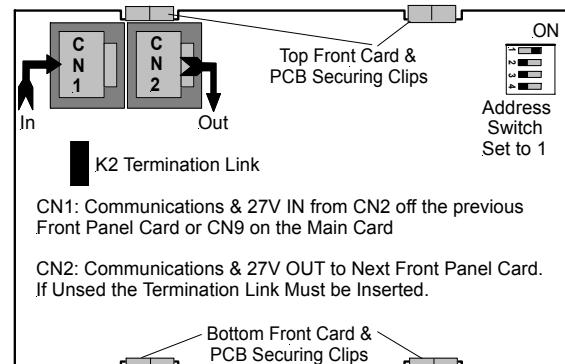


Figure 10: Fire Fan Module PCB Layout

4.5 Fan Termination Board BRD25FTB

The Fan Termination Board interfaces between the Fire Fan Module and the plant/equipment it controls via the 24 volt 250mA Start, Stop, current limited, relay outputs and monitor inputs. Programmable monitoring of the field equipment is achieved using 0 volts as an input level to indicate run, fault and stop conditions of that equipment. Monitoring is programmed in the Function Menu for a 3, 4 or 5 Wire Start / Stop, Run, Fault, Stop & Common functions. The inputs are protected by way of resetable transorbs and resistive / capacitive networks.

Quiescent Current: 6.5mA

Connectors

- CN1 RS485 Control IN from previous board or Main Card
- CN2 RS485 Control OUT to next board or LK1 EOL termination is applied
- CN3 27 VDC IN from CN10 of the Main Card or CN4 of the previous board
- CN4 27 VDC OUT

Terminal Blocks

TB2 – 5 Are used to connect the fan control and monitoring wiring to the board.

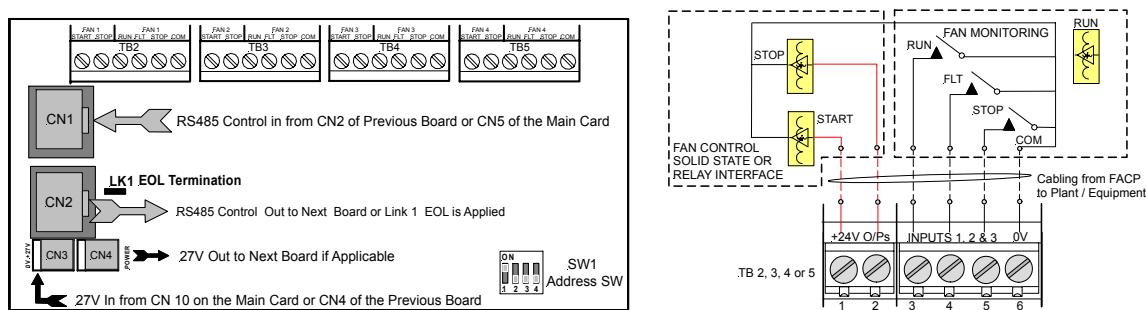


Figure 11: Fan Termination Board Layout and Typical I/O Wiring

4.6 General Indicator Card BRD25GIB -A

IMPORTANT

Note: The Cards BRD25GIB –A, B, C and D all have a common PCB. What sets them apart from each other is not only the function they perform but how the componentry is loaded onto the card to perform that function.

This Card indicates / displays the status of the inputs on the 16 Way Input Termination Board by way of Program selectable tri-coloured LED's with its function being identified on the front panel by slip in labels.

Quiescent Current: 3 to 3.5mA depending on the application

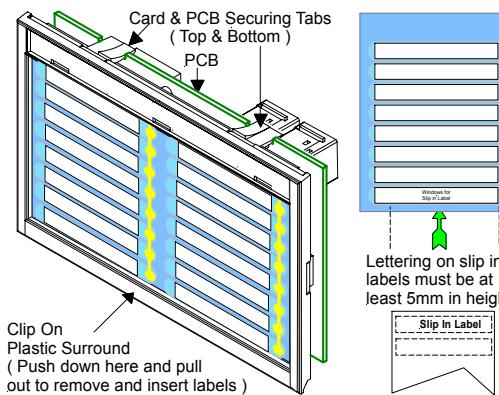


Figure 12: Front Panel Card Layout

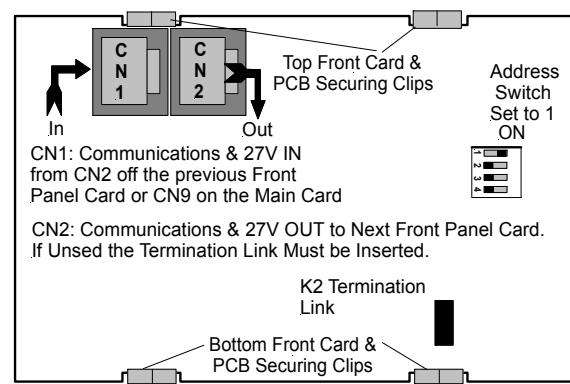


Figure 13: Front Panel Card & PCB Layout

4.7 Switch and Indicator Card BRD25GIB - B

This Card can effectively perform 2 different functions. Firstly the indicators monitor the first 8 inputs of the 16 Way Input Termination Board while secondly the switches can be programmed to manually operate a specific relay in the system.

Quiescent Current: 3.6mA

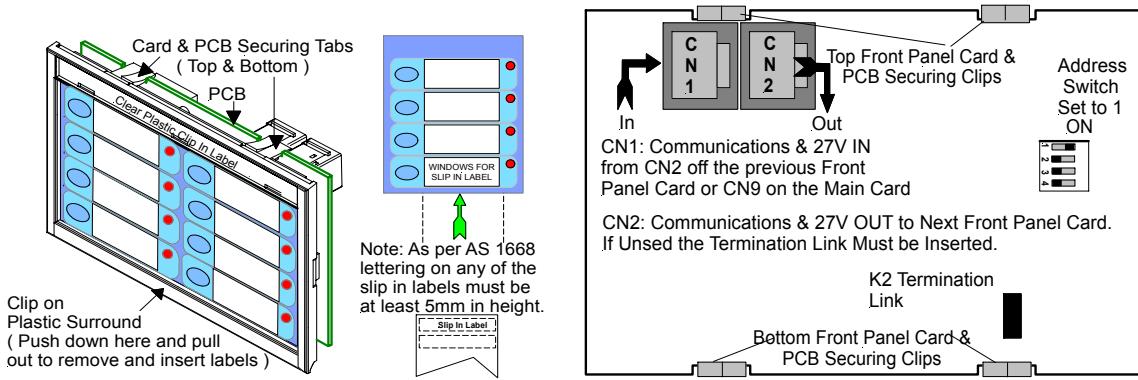


Figure 14: Front Panel Card & PCB Layout

4.8 Zone Mimic Indicator Card (Int. Pwr.) BRD25GIB - C

The internally powered Zone Mimic Indicator Card connects to the FACP 27 volt power supply and the internal communications bus for indication control. The card provides remote visual indication of any Zone in an Alarm and / or Fault / Isolate condition. A maximum of 8 of these cards can be connected to, or daisy chained together, on any one system. Slip in labels identify the monitored Zone. The Alarm LED's flash for an un - acknowledged alarm and are steady for acknowledged. The Fault / Isolate LED's flash for a Fault condition and are steady if a Zone is Isolated.

Quiescent Current: 14mA

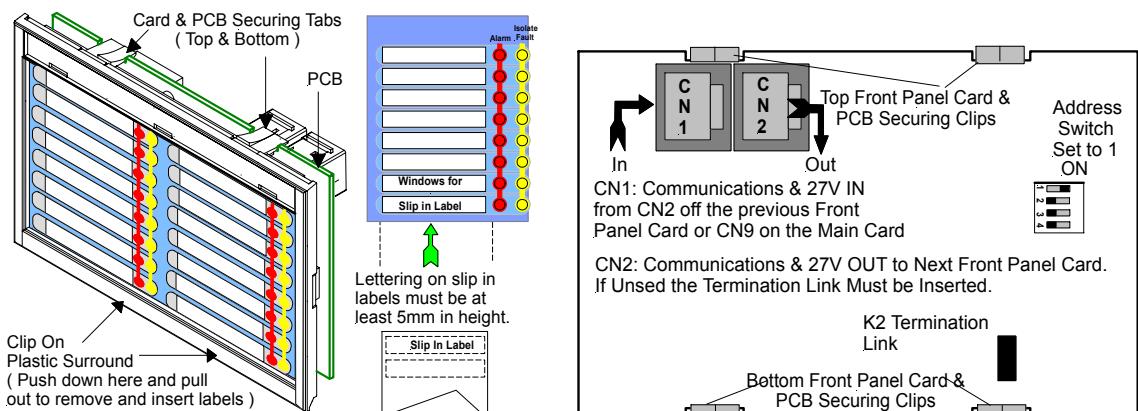


Figure 15: Front Panel Card & PCB Layout



Note: Except for CN1 & 2 being fitted and TB1, HY1 the Buzzer and CN6 not being fitted the underside of this card is the same as for the externally powered card.

4.9 Zone Mimic Indicator Card (Externally Powered.) BRD25GIB -C

The externally powered Zone Mimic Indicator Card operates in the same way as does the internally powered version. The only difference is that the 27 volt power supply is independent of the FACP. This card would be used when the distance involved causes a significant voltage drop such that it may effect the reliable operation of the system or the costs involved in the cable is offset by the availability of a remote 27 volt supply.

Quiescent Current: 13mA (This current applies to both cards)

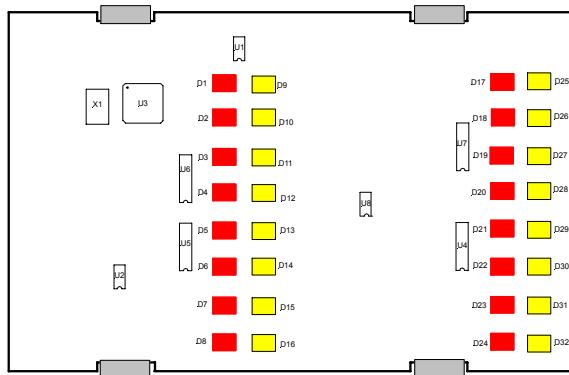


Figure 16: PCB Front Layout

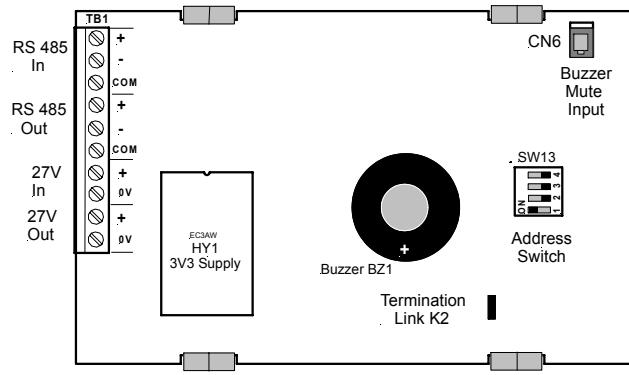


Figure 17: Underside of PCB

4.10 LED Annunciator Master (LAM) BRD25GIB - E

The LAM provides remote stand alone FACP status, Alarm and Fault / Isolate Indication of 8 zones. Two push buttons, Lamp Test and Silence Buzzer, provide for local testing of the indicators and buzzer while the buzzer duplicates that at the FACP. A maximum of 4 LAMs with addresses of 1 to 4 may be cabled to an FACP.

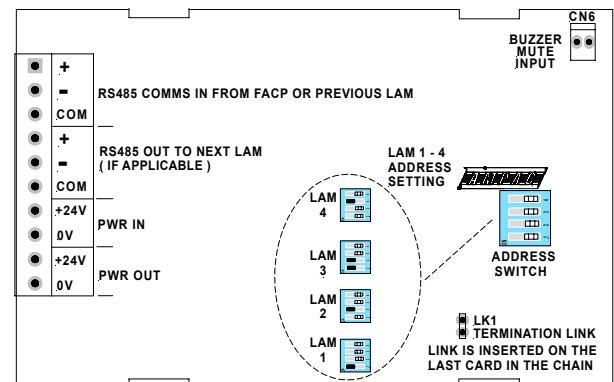
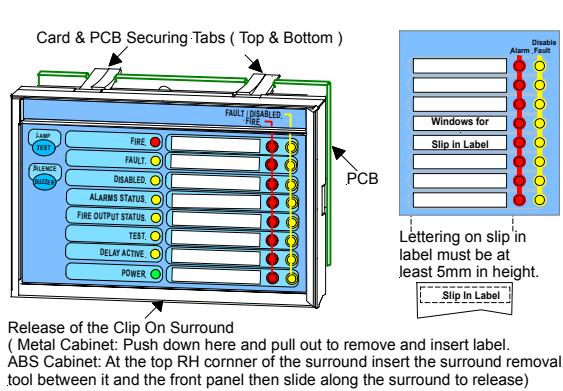


Figure 18: LAM Front Panel and PCB Layout

4.11 Sounder Board BRD25SOPB -A

The Sounder Board expands the number of sounders that can be used on an FACP to 8. Each solid state output is rated at 24VDC / 500mA. and requires a 10KΩ End of Line (EOL) resistor regardless whether or not a sounder is wired to the circuit.

Quiescent Current: 5.6mA

Maximum Current per Output: 500mA

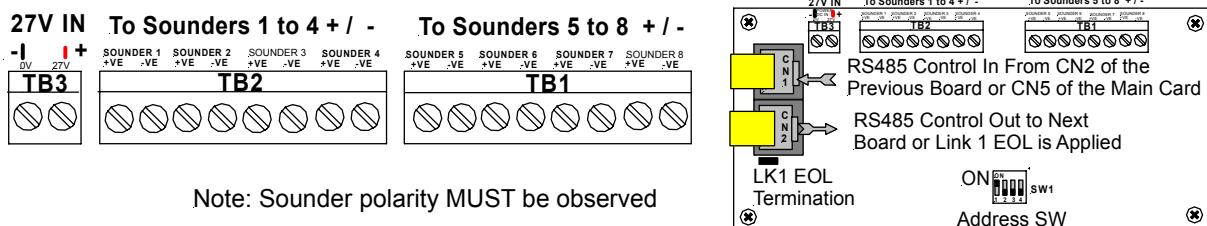


Figure 19: Wiring Detail & PCB Layout



Note: Sounder polarity MUST be observed.

5

Agent Release

Control consists of the FACP Agent Release Module and Termination Board. Should control be required at a point remote from the FACP an Agent Release Local Control Station can be incorporated .

5.1 Operation

Introduction

The Agent Release Module and Termination Board communicate with the FACP via the RS485 multi-drop bus.

The Agent Release Local Control Station communicates only with the Termination Board via a separate RS485 bus. Up to 4 Agent Release Local Control Stations can be connected to one termination board.

The Agent Release Module operates in three modes;

1. Automatic/Manual;
2. Manual Only; and
3. Disable.

The mode is selected by operating the keyswitch switch on either or module.

The keyswitch at the Agent Release Module is the only keyswitch with a Disable selection and has the highest priority. Hence when the keyswitch is in the Disable position all other keyswitches are ignored and the agent control system is in the Disabled mode.

Next priority is Manual Only. If any keyswitch is in Manual Only (providing the keyswitch at the Agent Release Module is NOT in Disable), then the board is in the Manual Only mode.

Finally, the system is in the Auto/Manual mode when all keyswitches are in Auto Manual.

The pressure switch input on the termination board (which is used to confirm that the agent has been released) can be configured to accept a normally open contact, normally closed contact, or ignored. This is selected via the FACP on-site programming.

Disabled Mode

Disabled mode is selected by placing the keyswitch at the Agent Release Module in the Disabled position. This electrically isolates the activation circuit, and results in the following:

- Disabled indicators at the Agent Release Module and Local Control Station are lit.
- Agent Release Module and Local Control Station buzzers sound.
- No automatic releases can be commenced.
- System inoperative output is activated.



Note: *Disabled mode can not be overridden.*

Manual Mode

When the board is in manual mode, then the

- Manual Only indicators at the Agent Release Module and Local Control Station are lit
- No automatic release sequences can be commenced.
- Does not interrupt a release sequence that has started
- System inoperative output is activated

To manually discharge the agent, the Manual Release facility at the Agent Release Module or the Local Control Station is activated.

The manual release sequence is:

- ✓ Manual Release Activated indicators are lit on the Agent Release Module and Local Control Station
- ✓ Stage 1 outputs are switch to +24VDC.
- ✓ Stage 2 outputs are pulsed during the pre-release delay to +24VDC.
- ✓ Start optional pre-release delay. (Selected via FACP on-site programming).
- ✓ Upon expiration of the delay, activate the selected activation circuit and stage 2 outputs becomes steady
- ✓ Light the agent released LED on the Agent Release Module and Local Control Station when pressure switch input on the termination card is activated or immediately (depends on the pressure switch configuration).
- ✓ FACP to activate the FIRE output and light the FIRE LED

The discharge sequence can be interrupted by the activation of the Hold input. Activation of the Hold input prevents the release of the agent. When the Hold switch is released, the pre-release delay is restarted. While the Hold input is activated, the stage 2 output is switched off, and the buzzer will sound.

Auto/Manual Mode

In this mode, automatic and manual discharge is possible. For manual discharge see above.

The automatic discharge sequence is initiated when one or two zones go into alarm.

With *single zone alarm activation* the following discharge sequence is executed.

- ✓ Auto Activation indicator is lit on the Agent Release Module and Local Control Station
- ✓ Stage 1 outputs are switched to +24VDC
- ✓ Stage 2 outputs are pulsed during the pre-release delay to +24VDC
- ✓ Start optional pre-release delay (Selected via FACP on-site programming).
- ✓ Upon expiration of the delay, activate the selected activation circuit and stage 2 outputs becomes steady.
- ✓ If configured light the agent released LED on the Agent Release Module and Local Control Station when pressure switch input on the termination board is activated.
- ✓ FACP to activate the FIRE output and illuminate the FIRE LED.
- ✓ The operation of the Hold switch is as per the manual release

With *dual zone activation*, if the first zone goes into alarm, then the following steps are followed;

- ✓ Flash the auto release activated LED at the Agent Release Module and Local Control Station
- ✓ Stage 1 outputs are switched to +24VDC

When the second zone goes into alarm, then the following steps are followed

- ✓ Auto release activated LED on the Agent Release Module and Local Control Station goes steady
- ✓ Stage 2 outputs are pulsed during the pre-release delay to +24VDC
- ✓ Start optional pre-release delay. (Selected via FACP on-site programming).
- ✓ Upon expiration of the delay, activate the selected activation circuit and stage 2 outputs becomes steady.
- ✓ Light the Agent Released LED on the Agent Release Module and Local Control Station when the pressure switch input on the termination board is activated (depends on the pressure switch configuration).
- ✓ FACP to activate the Fire output and illuminate the Fire LED

The operation of the Hold switch is as per the Manual Release.

Released Condition

When the agent has been released, and the pressure switch input has been activated, then the board is in the released condition. The condition is shown by:

- ✓ Agent Released indicator is lit at the Agent Release Module and Local Control Station
- ✓ FACP Fire output and associated indicator is On.

The condition remains until reset has been activated at the FACP.

It is possible, when the agent release module is in the released condition to de-activate the Stage 1 and Stage 2 outputs. This is achieved by depressing the SILENCE/RESOUND button at the FACP. This action will also silence the alarm outputs at the FACP and the sounder outputs on the 8 way sounder board (if fitted). If the SILENCE/RESOUND button is depressed again to instigate the RESOUND facility, then the stage 1 and stage 2 outputs will be re-activated (as will the onboard alarm outputs and sounder outputs on the 8 way sounder board if fitted).

Lock-Off Valve

When the lock-off valve is operated, the agent is blocked from reaching the release valve. When the lock-off valve is operated, the following occurs:

- ✓ Light the Blocked Mode indicator at the Agent Release Module and Local Control Station
- ✓ Operates the system inoperative output

Fault Monitoring

The sources of fault in the system are:

- ✓ Pressure switch monitoring circuit
- ✓ Low pressure switch monitoring circuit
- ✓ Lock-off valve monitoring circuit
- ✓ Activation circuit
- ✓ Stage 1 outputs
- ✓ Stage 2 outputs
- ✓ Fault in the trigger zones
- ✓ Fault with a Local Control Station



Note #1: The common fault indicator on the Agent Release Module and Local Control Station is illuminated for any Fault condition.

Note #2: For a pressure switch fault, low pressure switch fault, lock-off valve fault, stage 1 output fault and stage 2 output fault the FACP will signal the brigade.

Note #3: When there is a fault in the activation circuit or in the trigger zones, in addition to the above, the system inoperative output is operated.

Note #4: The FACP buzzer sounds for all faults and the LCD displays the type of fault.

Note #5: The FACP will report the type of fault on the LCD.

Isolation

If the trigger zones are isolated by the FACP, then the trigger zone isolated indicator at the Agent Release Module and Local Control Station is illuminated, and the system inoperative output is operated.

Disablement of the Trigger Zones

If the trigger zones are disabled by the FACP, then the isolate indicator at the FACP is illuminated and the system inoperative output is operated.

5.2 Agent Release Module BRD25ARB - A

The Agent Release Module controls and monitors all the requirements for agent release and carries the slide in label for identification of the agent and application area.

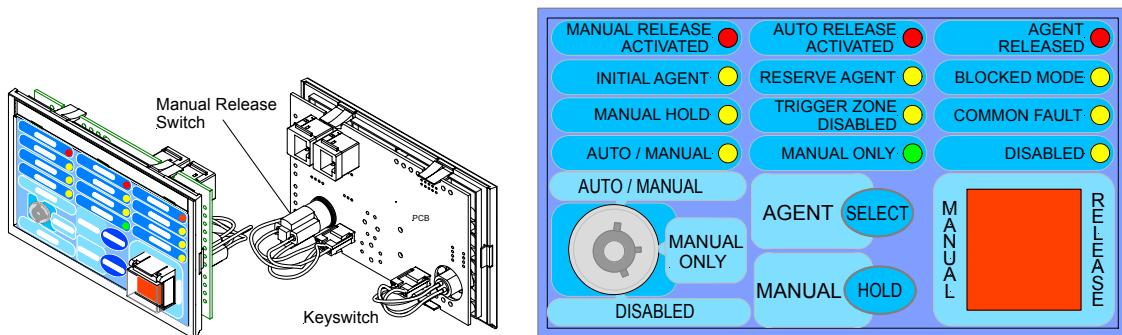


Figure 20: Exploded View of Module and Front Panel Layout

Controlled Access

It is a requirement that control be secured from unauthorised use. For this reason a key switch has been included in the control process.



Disabled, Manual Only, Auto/Manual Keyswitch In disabled mode the selected activation circuit is electrically isolated from the activation device, and the agent can not be released. In manual only mode, the agent can only be released manually, and in Auto/Manual mode the agent can be released automatically or manually.



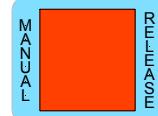
Note: The key is removable in all positions.



Manual Hold When activated, delays the discharge of the agent. When the switch is depressed during the pre-discharge delay, the delay is restarted when the switch is released. If depressed at any other time a fault is registered after a 10 second debounce time out period.



Agent Select When activated, causes the selected agent to toggle between Initial and Reserve.



Manual Release When activated causes a manual release of the agent, providing the system is operative.

Agent Release Module PCB Layout

The PCB is fitted with two 2 x RJ45 connectors CN6 & 7 for power (27VDC) and communications (RS485) for communications between the Module and the FACP Main Card.

Quiescent Current: 28.5mA

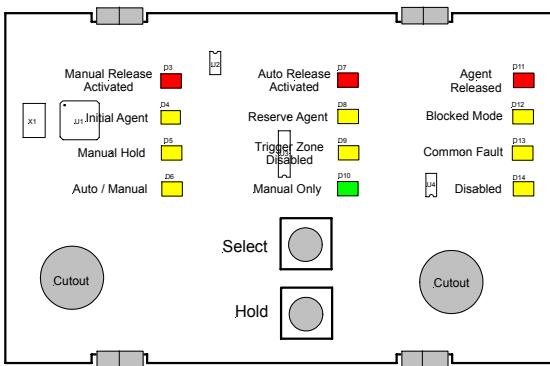


Figure 21: Front Panel PCB Layout

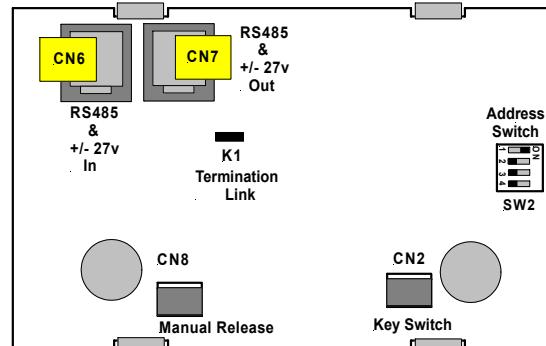


Figure 22: Underside of the Front Panel PCB



Note: If the keyswitch is not used CN2 will carry a link so as to activate the panel.

5.3 Local Control Station BRD25ARB - B

Except for the agent select button, and the keyswitch only offering the Auto/Manual and Manual Only selection the Local Control Station has the same indicators and controls as the Agent Release Module.

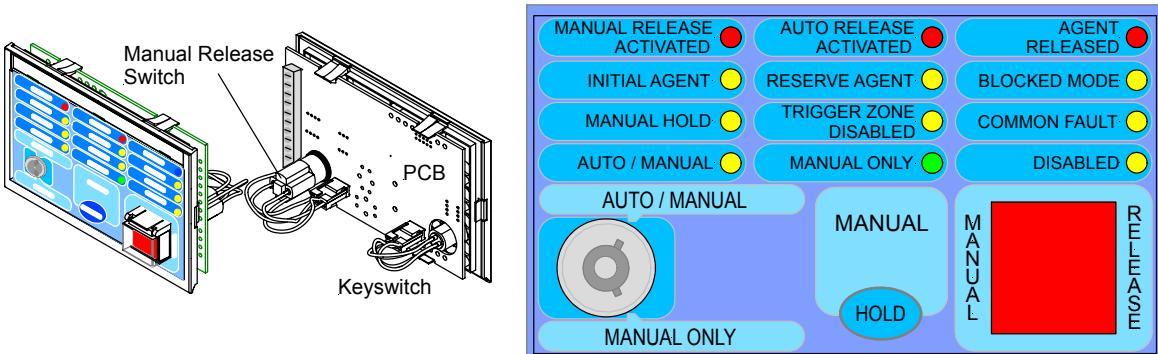
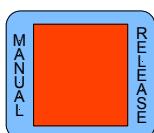


Figure 23: Local Control Station Layout



Manual Release Pressing the push button starts the manual agent release sequence. This two action safety feature prevents any accidental operation of the control and should not be disabled.



Manual Hold When pressed places the system into manual mode and prevents the initiation of the automatic discharge sequence.

5.4 Common Agent Release Module and Local Control Station Indicators



Manual Release Activated

Red in colour. Lit when a manual agent release sequence has commenced. This can be instigated from the Agent Release Card and Local Control Station.



Auto Release Activated

Red in colour. Lit when a automatic agent release sequence has commenced. This occurs when the zone(s) on the FACP have gone into alarm. For dual zones, the indicator should flash when the first zone goes into alarm, and steady when the second zone goes into alarm.



Agent Released

Red in colour. Lit when the pressure switch indicates the agent has been discharged.



Initial Agent

Yellow in colour. Lit when the initial agent activation circuit is selected.



Reserve Agent

Yellow in colour. Lit when the reserve agent activation circuit is selected.



Blocked Mode

Yellow in colour. Lit when the lock-off valve has been activated.



Manual Hold

Yellow in colour. Lit when a Hold button is depressed on an LCS.



Trigger Zone Disabled

Yellow in colour. Lit when any of the trigger zones on the FACP are disabled.



Common Fault

Yellow in colour. Lit under pressure switch, low pressure switch, lock-off valve, activation circuit, stage 1 output, stage 2 output, Local Control Station, trigger zone(s) fault conditions.



Auto/Manual

Yellow in colour. Lit when a release sequence can be started automatically or manually.



Manual Only

Green in colour. Lit when a release sequence can be started manually only.



Disabled

Yellow in colour. Lit when the release sequence can not be started automatically or manually.

Buzzer

Buzzer is activated under programmed control.

Local Control Station Terminal Blocks TB1 & TB2

TB2 Terminal	Assignment	TB1 Terminal	Assignment
1	RS485 + In	1	+27V In
2	RS485 - In	2	0V In
3	RS485 Common	3	+27V Out
4	RS485 + Out	4	0V Out
5	RS485 - Out		
6	RS485 Common		
7	Interlock+		
8	Interlock-		

Quiescent Current: 18.5mA

Local Control Station Layout

The Comms line is RS485 between the Local Control Station and the Termination Board.

The Interlock is a monitored input with 10KΩ EOL used to determine if air conditioning dampers and doors are closed. Typically the agent is not discharged until all dampers / doors are closed.

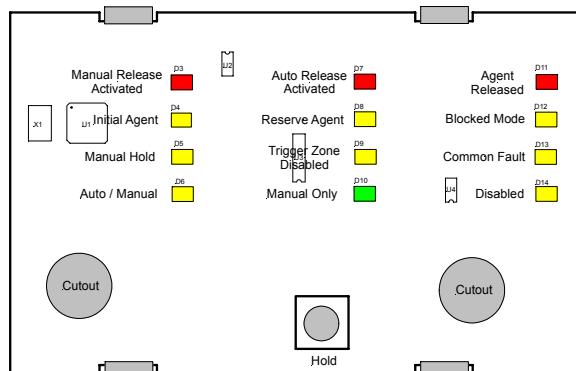


Figure 24: Top PCB Layout

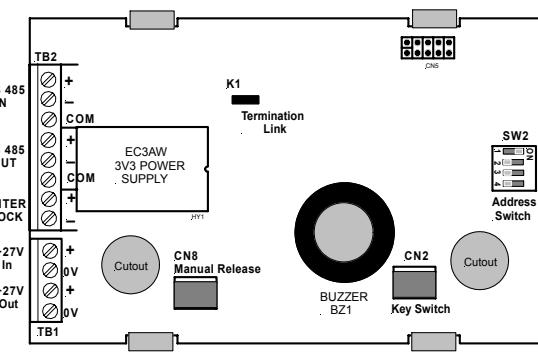


Figure 25: Bottom PCB Layout

5.5 Agent Release Termination Board BRD25ATB

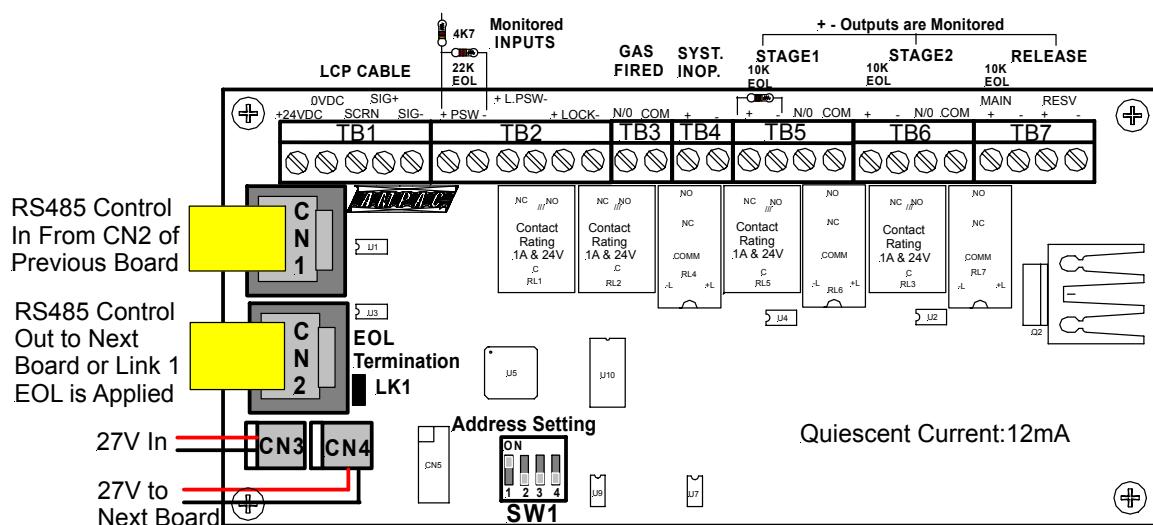


Figure 26: Agent Termination Board PCB Layout

The Agent Release Termination Board interfaces to the;

1. The FACP via CN1, CN2 continuing the RS485 communications bus if required. LK1 is inserted if this is the last backpan board on the bus.
2. LCS's (up to 4) via TB1. LK1 is inserted in the last board in the RS485 Bus
3. **Monitored Inputs:** via TB2. (EOL Resistance 22KΩ, Series Resistance 4K7Ω)
 - (a) Pressure Switch (**PSW**) agent released
 - (b) Low Pressure Switch (**LPSW**) agent storage cylinder pressure has dropped to a pre-determined level; and
 - (c) **Interlock**, the manual lock-off valve has been operated.
4. **Gas Fired:** Output via RL2 N/O contacts rated at 1A @ 24VDC wired to TB3. Used to indicate to other monitoring devices the agent has been released.
5. **System Inoperative:** via RL1 N/O contacts rated at 1A @ 24VDC wired to TB4. Used to warn by way of signage / audible alarm and/or monitoring that the system is inoperative.
6. **Stage 1:** Output; initiates the visual and audible Fire Alarm and Evacuate warnings.
 - (a) Monitored; via RL4 C/O contacts wired to TB5 1 & 2 (EOL required 10KΩ) and
 - (b) un-monitored; via RL5 N/O contacts wired to TB5 3 & 4.
7. **Stage 2:** output; initiates the visual and audible Fire Alarm and Do Not Enter warnings
 - (a) Monitored; via RL6 C/O contacts wired to TB6 1 & 2; (EOL required is 10KΩ) and
 - (b) Un-monitored; via RL3 N/O contacts wired to TB6 3 & 4
8. **Release:** **Main** actuating circuit, monitored (10KΩ EOL required) via TB7 1 & 2 (2A current limited),
Release: Reserve actuating circuit, monitored (10KΩ EOL required) via TB7 3 & 4 (2A current limited)
 - (a) To Pyrogen Igniter (max of 10)
 - (b) Metron Igniters (max of 10 – a series 2watt 18Ω resister must be added to the circuit)
 - (c) Solenoid valve (max current of 2 amps & 27VDC)

5.6 Interface Wiring

Monitored Inputs TB2 1 & 2

Pyrogen,

This input relies on a thermal fuse used in conjunction with 22KΩ EOL and 4K7Ω series resistors. The type of agent release mechanism has to be set in the Programming Menu for the input to function as per the manufacturers specifications and be in accordance with the relevant Standard.

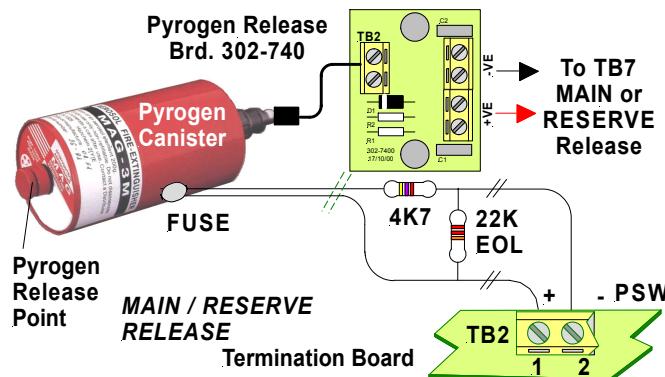


Figure 27: Pyrogen Wiring

Solenoid & Metron

This input relies on N/O or N/C relay contacts used in conjunction with $22\text{K}\Omega$ EOL and $4\text{K7}\Omega$ series resistors. The type of agent release mechanism and contacts used has to be set in the Programming Menu for the input to function as per the manufacturers specifications and be in accordance with the relevant Standard.

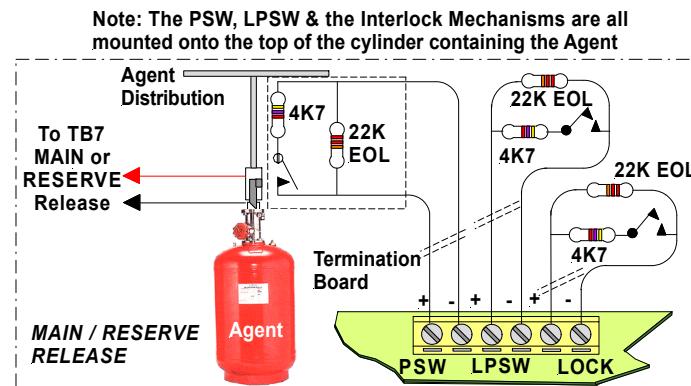


Figure 28: Solenoid, Metron PSW, LPSW and "LOCK" Wiring

LPSW & Lock

These inputs are also monitored and should be wired as shown above

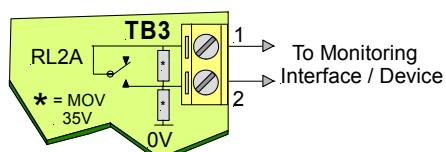


Figure 29: Gas Fired Wiring

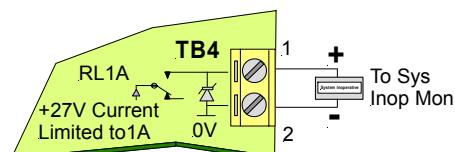


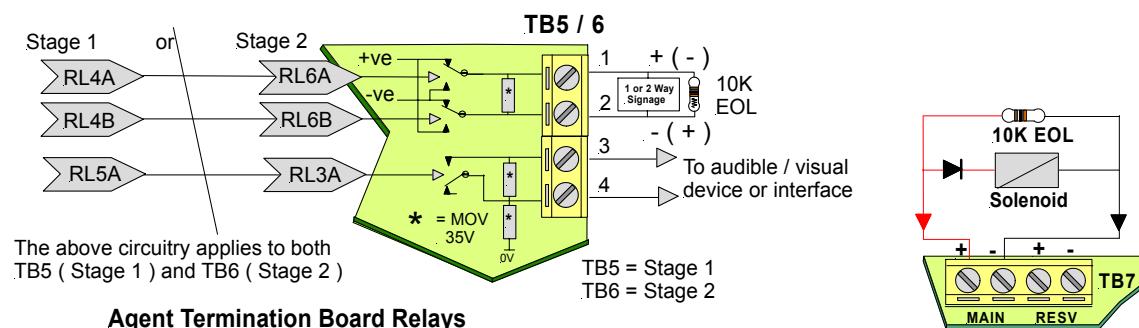
Figure 30: System Inoperative Wiring

As can be seen from above the;

Gas Fired Output can be wired to any interfacing or 1A monitoring circuit that requires a closed relay contact to indicate a change of state. This could be a relay or a solid state device.

System Inoperative Outputs 27V @ 1A to supply interfacing, signage and aural alarms to indicate the system has been taken out of service or has developed a fault.

Stage 1, Stage 2



Agent Termination Board Relays

Figure 31: Stage 1 and 2 Wiring

Figure 32: Agent Release Solenoid Wiring

Current Generation Signage

Stage 1 displays the warning sequence ie discharge of the agent is imminent while Stage 2 communicates the discharge of the agent is or has occurred DO NOT ENTER.

2nd Generation Signage

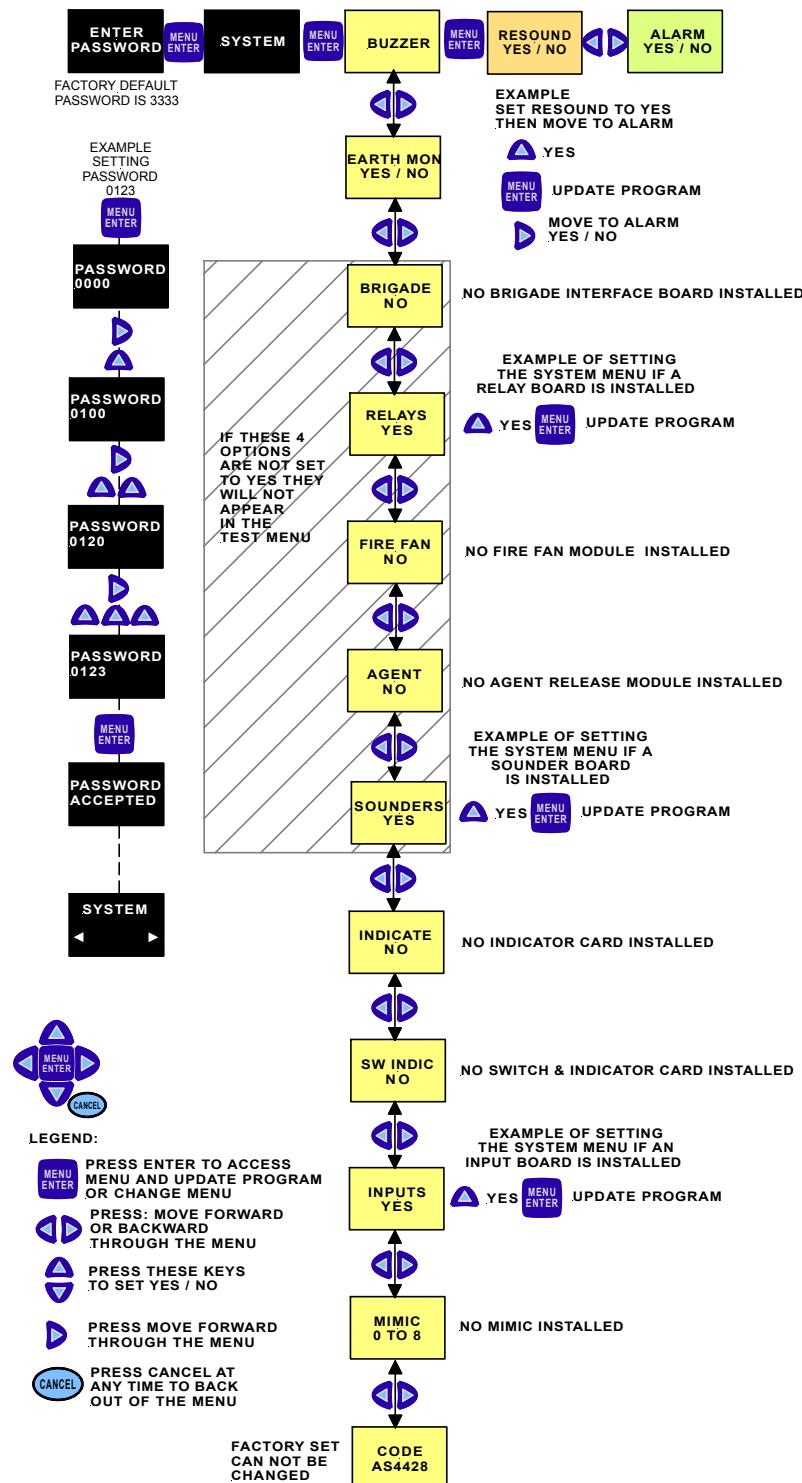
Is able to display both phases of agent release.

6 Appendix: Adding to the System Menu & Programming

In this example 1 Input Board, 1 Relay Board and 1 Sounder Board will be added to the system. The Display and Zone Labels will then be edited.

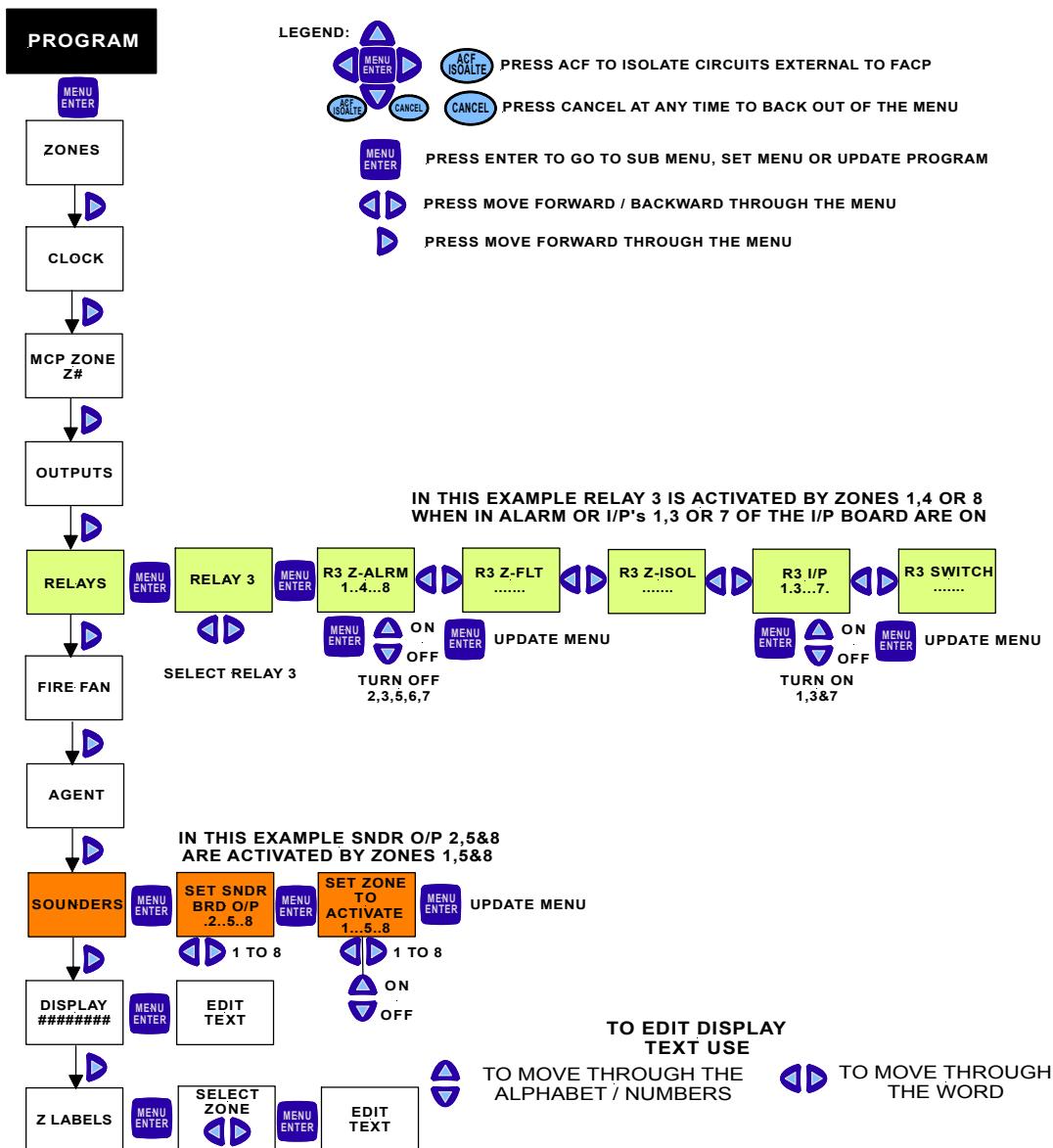
Step 1:

Go to the SYSTEM MENU and then follow the procedure as set out below.

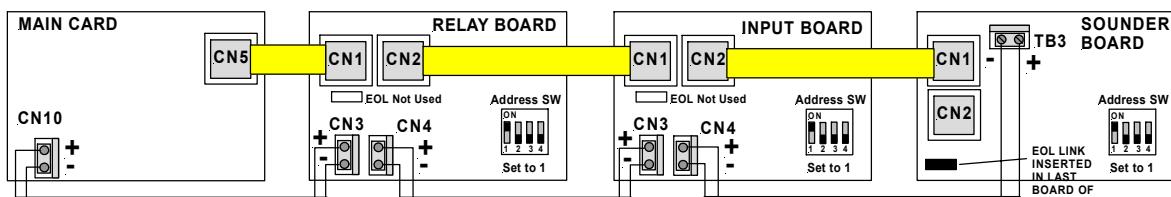


Example of Adding Input, Relay and Sounder Boards in the SYSTEM MEU

Step 2



Programming the Relays and Sounders to be Activated by Zones and Editing Text



RS485 and 27V Cabling for the Installation of a Relay, Input and Sounder Board as in the SYSTEM and PROGRAMMING Menu Structures Above

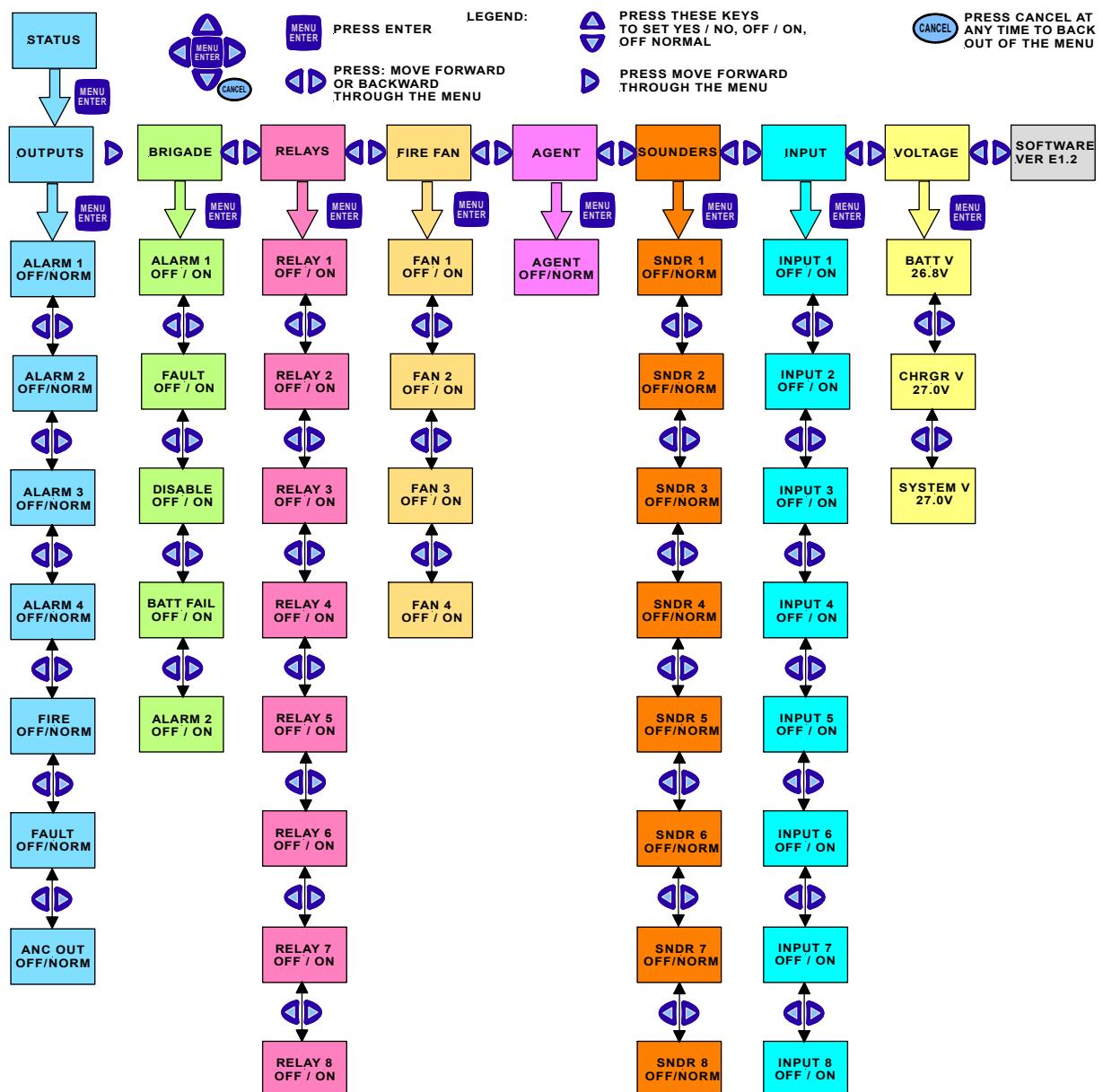
7 Status and Programming Screens

The following shows all the screens that are possible in the FACP and how to navigate through them. If a screen is not available it means that option has not been installed or is not available to the model in use.

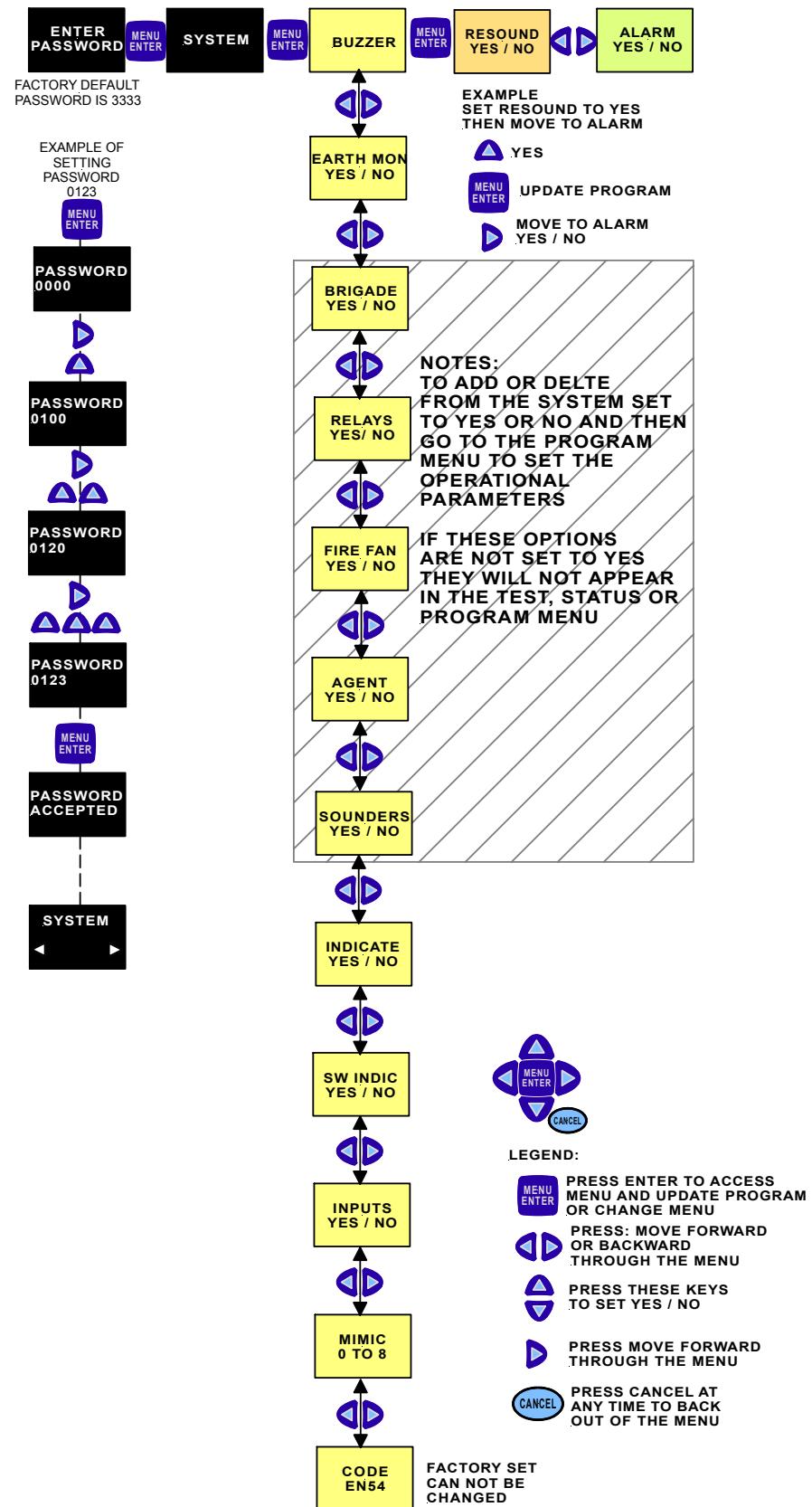
Operating Main Menu

LEVEL 1		LEVEL 2		LEVEL 3	
STATUS	FAULTS	TEST	DISABLE	SYSTEM	PROGRAMMING

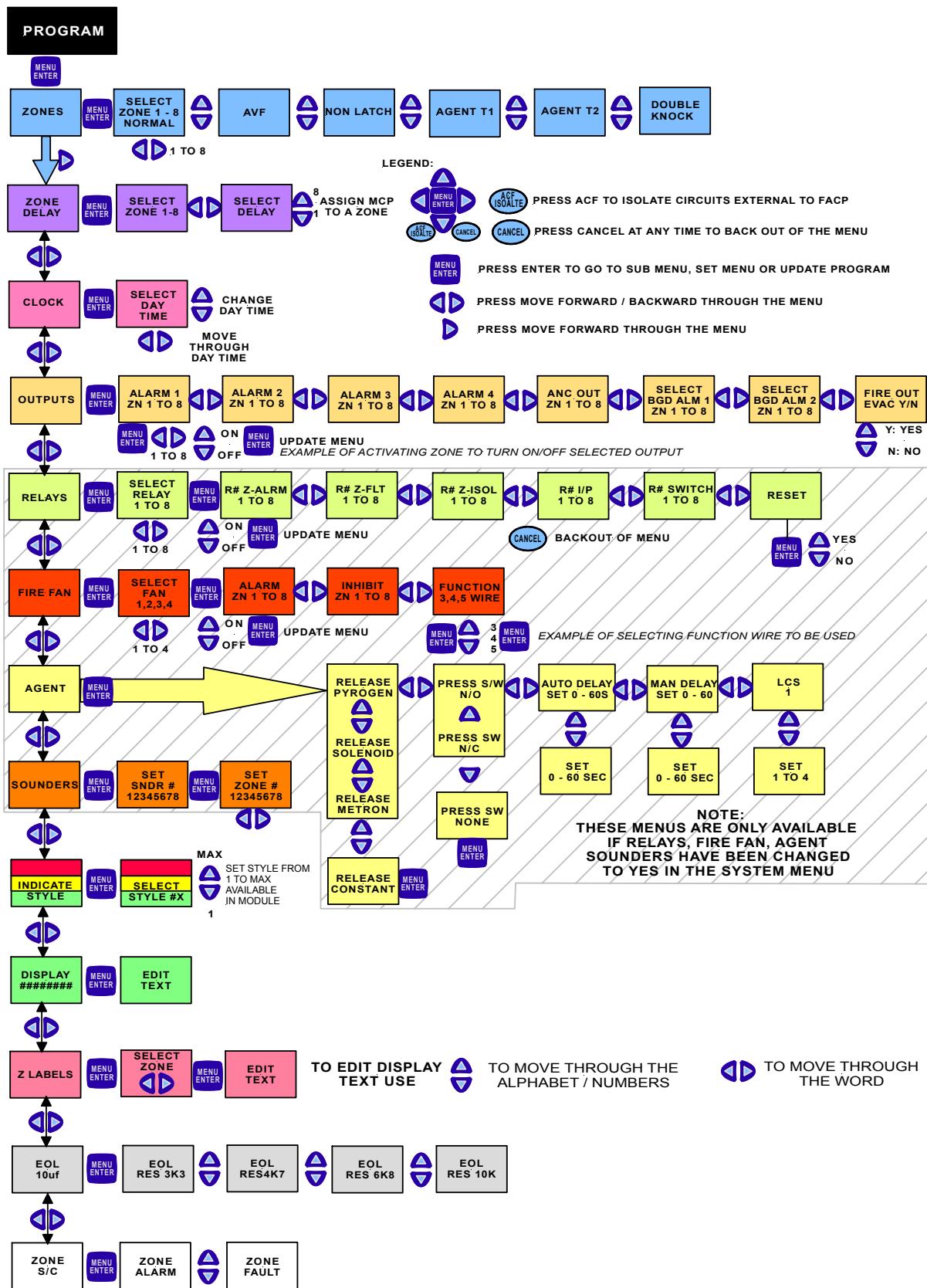
7.1 Level 1 to 3 Status Screens



7.2 Level 3 System Programming



7.3 Level 3 Programming Menu





Installation & Commissioning of Control & Monitoring Add On's

ZoneSense



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NOTE: Due to Ampac's commitment to continuous improvement specifications may change without notice.